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AUTHOR Friedlander, Jack
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ABSTRACT

The Post-Education Employment Tracking System (PEETS), operated by the Chancellor's Office of the California Community Colleges (CCC) in cooperation with the State of California's Employment Development Department (EDD), is an automated system for tracking the post-college employment rates and earnings of community college program completers and leavers over an extended period of time. The system uses social security numbers to match EDD quarterly wage data with student records. To determine the feasibility, cost, and educational value of using PEETS, a study was conducted in 1992-93 by the Chancellor's Office, EDD, Santa Barbara City College, and Grossmont College. The study found that PEETS can be used to answer questions regarding employment patterns of former students, employment rates by major and type of degree, comparative earnings of associate degree graduates and those who did not complete the degree, earnings and employment rates in different population groups, geographic mobility of working graduates, type of industries employing graduates, relationship of training and employment. It concluded that PEETS is an inexpensive method for tracking the success of former students, and can be used to meet accreditation requirements and respond to consumer inquiries. This report describes PEETS; presents the results of the 1992-93 study of the technical feasibility, cost, and educational value of using PEETS to trace employment rates and earnings of community college vocational program graduates and dropouts over a 4-year period; identifies potential applications of PEETS-generated information for assessing and strengthening occupational programs; lists the major advantages and disadvantages of PEETS as a method for assessment of labor market outcomes; and advances recommendations for enhancing the value of PEETS. (PAA)

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USING WAGE RECORD DATA TO
TRACK THE POST-COLLEGE EMPLOYMENT AND
EARNINGS OF COMMUNITY COLLEGE STUDENTS

Dr. Jack Friedlander
Dean, Academic Affairs
Santa Barbara City College

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ACKNOWLEDGMENTS

In the Spring 1992 issue of the CCCAOE Newsletter, I wrote an article entitled, "Using Wage Record Data to Measure the Success of Students in the Labor Market." My purpose in writing this article was to (1) describe the potential application of Unemployment Insurance wage record data collected by the Employment Development Department (EDD) in tracking the post-college employment and earnings of occupational educational students; and (2) enlist the support of key state policy-makers and campus-based leaders to consider using the UI wage record data as a means of conducting follow-up studies on the success of former occupational education program students in the labor market.

Thanks to the efforts of the following people, the idea of using UI wage record data in follow-up studies has become a reality in just over a year. Dr. Ernie Leach and Dr. Susan Sargent of the Chancellor's Office were instrumental in promoting the idea to the Employment Development Department. Jim Johnson of EDD played a key role in getting approval of this project from his agency and securing funding from the California Occupational Information Coordinating Committee to support this pilot project. Dave Jones, of EDD, devoted a great deal of time to preparing the data files used in the pilot project and in assessing the feasibility of using UI wage record data in this type of study. He provided the expertise needed to make this study possible.

Larry Smith and Winston Dean, faculty members at Grossmont College did an outstanding job in conducting the feasibility of using data from their institution. Larry and Winston contributed a great deal to the success of this project.

Bill Hamre and John Haskins provided the data processing support for me at Santa Barbara City College. This project would not have been possible without their creativity and problem-solving skills.

Susan Sargent served as the monitor for this project and as the liaison between the Chancellor's Office and EDD. Dr. Phoebe Helms and Susan Sargent were responsible for working with EDD and members of the Chancellor's Office MIS unit in developing the procedures for implementing the Post-Education Employment Tracking System statewide. Jan Paulson has assumed the lead responsibility for devising methods for matching the UI wage data with the student record files in the Chancellor's Office MIS and in producing reports containing the results of the follow-up studies to the colleges.

The following individuals critiqued drafts of this paper and provided me with valuable suggestions for its improvement: Larry Smith and Dean Winston, Grossmont College; Tom Oliver, Los Angeles Valley College; Ken Speed, Butte college; Fred Critchfield, Foothill College; Jan Paulsen and Susan Sargent of the Chancellor's Office; and Dave Jones of EDD. Rob Reilly edited the paper and Jan Martin exhibited her patience and skills in typing numerous drafts of this report.

Finally, I wish to express my appreciation to Peter MacDougall, President of Santa Barbara City College, and John Romo, Vice President for Academic Affairs, for their ongoing and enthusiastic support of my involvement in the project.

USING WAGE RECORD DATA TO TRACK THE POST-COLLEGE EMPLOYMENT AND EARNINGS OF COMMUNITY COLLEGE STUDENTS

Dr. Jack Friedlander
Dean, Academic Affairs
Santa Barbara City College

EXECUTIVE SUMMARY

What are the post-college employment rates and wages by major field for California community college students who earn an associate degree or certificate in an occupational education program? Do the post-college earnings of students with associate degrees increase over time at a faster rate than those of students who left college before receiving a degree? Are there systematic differences in the post-college employment rates and earnings among occupational education students in different population groups?

Accurate and timely answers to these questions can now be provided in an efficient and cost-effective manner through the Post-Education Employment Tracking System (PEETS) that is operated by the Chancellor's Office of the California Community Colleges, in cooperation with the State of California's Employment Development Department (EDD).

This automated system for tracking the post-college employment rates and earnings of community college program completers and leavers over an extended period of time involves electronically matching, by Social Security number, quarterly wage record data routinely collected by EDD from employers with student demographic and educational data available in the Chancellor's Office Management Information System (MIS). The results of a feasibility study conducted in 1992-93 by the Chancellor's Office, EDD, Santa Barbara City College and Grossmont College revealed that:

1. Wage record data for one or more quarters were available for over 90% of the students enrolled in occupational education programs one to three years after they left the community college they were attending. The percentage of former occupational education program students for whom wage record data were available in a particular year ranged from 80% for the first year after leaving college to 75% three years after leaving college.
2. The technology and staff expertise are available to electronically match Unemployment Insurance (UI) wage record data collected by EDD with student records in the Chancellor's Office MIS.
3. Matching wage record data with the student data in the Chancellor's Office MIS for all community college program completers and leavers over a four-year period is an inexpensive method for tracking the success of former students in the labor market.

4. The information provided from the Post-Education Employment Tracking System can be used to respond to federal, state, accrediting commission and local district accountability requirements pertaining to job placement rates and subsequent earnings of students who participated in occupational education programs.
5. The data provided by PEETS can be used to respond to consumers' questions concerning the economic value of participation in a particular occupational education program.
6. The post-college, year-round employment rates and earnings of occupational education students who received an associate degree were substantially greater than those of students who completed 12 or more units of occupational education courses but left college without an associate degree.
7. Students who completed an associate degree or certificate more than tripled their earnings from the time they were attending classes to three years after they left college. Those who left the college after completing 12 or more units of occupational education courses without a degree or certificate saw their earnings more than double during this same time period.
8. The post-college earnings and year-round employment rates of economically disadvantaged students who completed the associate degree were nearly as high as those of the associate degree recipients who were not economically disadvantaged while attending college, and substantially greater than those of non-economically disadvantaged students who left college without an associate degree.

Implementation of Post-Education Employment Tracking System. The Chancellor's Office of the California Community Colleges is in the process of entering into an agreement with the California Employment Development Department to electronically match the UI wage record data with the student records maintained in the Chancellor's Office Management Information System. The plans call for tracking the employment and wage experiences of all college program completers and leavers over a four-year period, from their last year of attendance at the community college to three years after they leave the college. Matching of the UI wage record data with the student files in the Chancellor's Office MIS will begin in Spring 1994. UI wage records for all four quarters in a given year will be added to the student files once each year.

Overview of Paper. This paper (1) describes the Post-Education Employment Tracking System (PEETS); (2) presents the results of the study completed in 1992-1993 that assessed the technical feasibility, cost and educational value of using PEETS to track the employment rates and earnings of community college occupational program completers and leavers over a four-year period; (3) identifies potential applications of the information generated by PEETS for assessing and strengthening community college occupational programs; (4) lists the major advantages and limitations of PEETS as a method for assessing post-college labor market outcomes; and (5) advances specific recommendations for enhancing the educational value of the Post-Education Employment Tracking System.

USING WAGE RECORD DATA TO TRACK THE POST-COLLEGE EMPLOYMENT AND EARNINGS OF COMMUNITY COLLEGE STUDENTS

OVERVIEW

What are the post-college employment rates and wages by major field for California community college students who earn an associate degree or certificate in an occupational education program? Do the post-college earnings of students with associate degrees increase over time at a faster rate than those of students who left college before receiving a degree? Are there systematic differences in the post-college employment rates and earnings among occupational education students in different population groups?

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1. Wage record data for one or more quarters were available for over 90% of the students enrolled in occupational education programs one to three years after they left the community college they were attending. The percentage of former occupational education program students for whom wage record data were available in a particular year ranged from 80% for the first year after leaving college to 75% three years after leaving college.
2. The technology and staff expertise are available to electronically match Unemployment Insurance (UI) wage record data collected by EDD with student records in the Chancellor's Office MIS.
3. Matching wage record data with the student data in the Chancellor's Office MIS for all community college program completers and leavers over a four-year period is an inexpensive method for tracking the success of former students in the labor market.
4. The information provided from the Post-Education Employment Tracking System can be used to respond to federal, state, accrediting commission and local district

accountability requirements pertaining to job placement rates and subsequent earnings of students who participated in occupational education programs.

5. The data provided by PEETS can be used to respond to consumers' questions concerning the economic value of participation in a particular occupational education program.
6. The post-college, year-round employment rates and earnings of occupational education students who received an associate degree were substantially greater than those of students who completed 12 or more units of occupational education courses but left college without an associate degree.
7. Students who completed an associate degree or certificate more than tripled their earnings from the time they were attending classes to three years after they left college. Those who left the college after completing 12 or more units of occupational education courses without a degree or certificate saw their earnings more than double during this same time period.
8. The post-college earnings and year-round employment rates of economically disadvantaged students who completed the associate degree were nearly as high as those of the associate degree recipients who were not economically disadvantaged while attending college, and substantially greater than those of non-economically disadvantaged students who left college without an associate degree.

PURPOSE OF PAPER

The purpose of this paper is to (1) describe the Post-Education Employment Tracking System (PEETS); (2) present the results of the study completed in 1992-1993 that assessed the technical feasibility, cost and educational value of using PEETS to track the employment rates and earnings of community college occupational program completers and leavers over a four-year period; (3) identify potential applications of the information generated by PEETS for assessing and strengthening community college occupational programs; (4) list the major advantages and limitations of PEETS as a method for assessing post-college labor market outcomes; and (5) advance specific recommendations for enhancing the educational value of the Post-Education Employment Tracking System.

DESCRIPTION OF THE POST-EDUCATION EMPLOYMENT TRACKING SYSTEM

The Post-Education Employment Tracking System consists of two sources of data:

(1) Unemployment Insurance (UI) wage data records collected quarterly from employers by the California Employment Development Department; and (2) demographic and educational data for all California community college students available in the Chancellor's Office MIS. The following is a brief description of each of these data sources.

Unemployment Insurance (UI) Wage Record Data

Unemployment Insurance wage records collected and maintained by California's Employment Development Department are used to determine employment and earnings. UI wage records contain quarterly reports of earnings submitted by each employer who is required to comply with the state's Unemployment Compensation law.

For each employee covered, an employer is required to report the employee's Social Security number and the total amount of earnings received during the quarter. The employer also reports his/her own unique employer identification number, the county in which the business is located, and the industry affiliation of the business (Standard Industrial Classification Code). Information on the actual number of hours worked in the quarter and the title of the position held by the employee is not currently collected from employers. The form used by EDD to collect this information is provided as **Attachment A**. All states are required by federal law to collect this information to administer their Unemployment Insurance Compensation laws.

Approximately 95 percent of all persons employed in California are included in the state's UI wage record database maintained by EDD. Those not included in the state's UI wage record data base are: (1) self-employed people; (2) employees who are paid entirely on a commission basis; and (3) federal government employees, including those in the military. These three groups, combined, comprise no more than three percent of the labor force nationwide (Stevens, et al, 1992). In addition, people who work outside of California are not included in the state's UI wage record database.

California Community Colleges Chancellor's Office Management Information System (MIS)

The Chancellor's Office MIS contains demographic and educational data for all students who attended California community colleges. The MIS is the state's official repository of community college student data from Fall 1990 forward. Demographic data available in the MIS include age, gender, ethnicity, financial aid status, English language proficiency, and disability status. Educational data stored in the MIS include courses completed, grades, and degrees and certificates awarded.

Linking UI Wage Record Data with Student Data in the Chancellor's Office MIS

The Post-Education Employment Training System involves electronically matching by Social Security number the UI wage record data files maintained by EDD with the student record files stored in the Chancellor's Office MIS. The following procedures are used in adding the UI wage record data to the student record files in the Chancellor's Office MIS:

1. The student record files for community college program completers and leavers are electronically submitted to EDD by the Chancellor's Office MIS unit.

2. EDD uses Social Security numbers to electronically match the wage record data files with the student data files.
3. EDD adds the wage record data to each student record file for each of the quarters requested.
4. To protect the confidentiality of the data, Social Security numbers are replaced by student identification numbers. The Social Security Administration Act allows for the use of Social Security numbers for identifying participants in publicly-funded programs. The Freedom of Information Act and the Buckley Amendments state that when data are aggregated to a level where no individuals or specific firms can be identified, a report will be in compliance. The procedures used in reporting the wage data to colleges will be consistent with the California Unemployment Insurance Code (Sections 1094 and 1095).
5. The student records, now containing the wage record data, are returned to the Chancellor's Office for analysis.
6. Longitudinal data on the employment and earnings of former students are acquired by having the Chancellor's Office MIS unit resubmit the student record files to EDD once a year to update the wage record information.

Current plans call for EDD to update the wage record data for each program completer and leaver for a four-year period, from the individual's last year of attending the community college to three years after leaving the college. Adding UI wage record data to the comprehensive files in the Chancellor's Office MIS will allow community college educators to ask a wide range of questions on the relationship between student participation in occupational education programs and post-college employment outcomes. Examples of the kinds of questions that can be addressed from data made available from the Post-Education Employment Tracking System are listed in **Table 1** on the following page.

TABLE 1

QUESTIONS THAT CAN BE ANSWERED BY LINKING WAGE
RECORD DATA WITH STUDENT RECORDS IN THE
CHANCELLOR'S OFFICE MANAGEMENT INFORMATION SYSTEM*

Question	Can Be Answered From UI Wage Record/MIS Data
How many students are working in California one to three years after they leave college?	Yes
How many students find year-round employment in California after completing a degree or certificate in their program of study?	Yes
What are the employment rates and earnings one to three years after leaving college, by major field, for students who completed an associate degree vs. a college certificate vs. completion of a specified number of units in their major with no degree or certificate?	Yes
Do the earnings of students with associate degrees increase over time at a greater rate than those of students who did not complete an associate degree?	Yes
Are grades associated with differences in employment rates and earnings?	Yes
What are the earnings and employment rates of former students in different population groups?	Yes
How many of the former students in each program area find employment in the county in which the college is located? In which counties of the state do former students in a particular program area work?	Yes
In what industries are former students employed?	Yes
Are former students employed in the fields in which they were trained?*	No
Do students who participate in particular college programs, such as Cooperative Work Experience, have higher employment rates and earnings than comparable groups of students who did not participate in these programs?	Yes

*NOTE. Data are available on the industry in which an individual is employed but not the specific position the person holds within the industry. A study is being conducted to determine the feasibility of having employers provide occupational-specific information on each of their employees.

COMMUNITY COLLEGE U.I. WAGE RECORD DATA FEASIBILITY PROJECT

In 1992-1993, EDD, the Chancellor's Office, Santa Barbara City College and Grossmont College (San Diego) participated in a project to determine the feasibility, cost and educational value of using existing UI wage record data files to track post-training employment of community college occupational education students. The first project component involved Grossmont College and Santa Barbara City College each sending a disk to the EDD containing the student record files for students who completed one or more SAM-coded B, C, or D occupational education courses during the five-year period from 1986-87 to 1990-91. The Social Security numbers of the college leavers in the classes of 1986 through 1991 were used to match EDD's UI wage record data files to the student files. The UI data containing quarterly wages and Standard Industry Classification Codes were added to the student record files. In retrospect, UI wage record data on the county in which the employee was working should have been included in this feasibility study. This would have enabled colleges to determine in which part of the state their former students found employment.

These data were delivered to the two participating colleges on a floppy disk with student Social Security numbers replaced by student ID numbers to keep the confidentiality of the students' UI wage record data, as required by the UI code. UI wage record data were provided for 23,622 students: 13,100 from Santa Barbara City College and 10,522 from Grossmont College.

Major Findings of the Feasibility Study

Match Rate. The percentage of former students for whom UI wage record data are available in a particular year is presented in **Table 2**. For instance, of the occupational education students who last attended Grossmont College or Santa Barbara City College in 1985-1986, UI wage record data were available for 80% of these former students in their first year after leaving college and 75% of these students in their third year out of college. Former students for whom UI wage record data were not available may not have been in the labor force in that particular year, they may have been employed but not covered by California Unemployment Insurance (e.g., employed by the federal government or armed forces, or self-employed), or they may have moved out of the state.

TABLE 2

**PERCENTAGE OF FORMER OCCUPATIONAL EDUCATION STUDENTS
FOR WHOM WAGE RECORD DATA WERE AVAILABLE
ONE TO FIVE YEARS AFTER LEAVING THE COLLEGE
(Students Leaving College During the 1985-1986 Academic Year)**

Year Out of College	SBCC (N = 1,844)	Grossmont (N = 1,609)	Combined Match Rate (N =3,453)
1985 (last year at college)	82.5%	81.7%	82.1%
1986 (1st year out)	81.1%	79.6%	80%
1987 (2nd year out)	77.7%	75.8%	77%
1988 (3rd year out)	76.3%	73.3%	75%
1989 (4th year out)	73.3%	72.2%	73%
1990 (5th year out)	71.4%	69.8%	71%

The match rate was even greater when assessing whether or not students were employed at some time during the first three years after leaving college. More specifically, as illustrated in Table 3, UI wage record data were available for over 90% of the program completers and leavers during their first three years after leaving the college. For example, of the students who last attended Grossmont College in 1985-1986, wage record data for at least one quarter were available for 94% of these former students from the year they last attended college to three years after leaving the college.

TABLE 3

**NUMBER OF STUDENTS FOR WHOM WAGE RECORD DATA
WERE AVAILABLE WITHIN A THREE-YEAR PERIOD
AFTER LEAVING COLLEGE***

Year Students Left College	Number of Students	Percentage of Students for Whom UI Wage Records Were Available During a Three-Year Time Period
1985-86	1,609	94%
1986-87	1,058	94%
1987-88	2,175	93%
1988-89	2,226	93%
1989-90	2,454	91%
TOTALS	10,522	93%

*Note: This method of calculating match rates was used by Grossmont College but not by Santa Barbara City College.

**Methods Used for Selecting Students for the Study and Assigning Them to
Occupational Education Major Field Categories**

The data analyses were based on those students who completed 12 or more units of occupational education courses at SBCC. Students who possessed an associate degree or higher before entering SBCC were excluded from the study. The decision to omit from this study former students who completed fewer than 12 units of occupational education coursework was based on the belief that individuals should have the equivalent of at least one semester of coursework in occupational education for the college to claim that it made a significant impact on the students' post-college employment rates and earnings. Admittedly, the decision to draw the line at 12 units was somewhat arbitrary. However, since UI wage record data can be added to all student records, colleges will be able to make their own decisions regarding which students to include in their follow-up studies.

The following method was used to assign students to an occupational education major. Students who received a degree or certificate in a particular major were assigned to that major. In cases where students earned more than one degree or certificate at SBCC, they were assigned to the major in which the degree was most recently earned. Students who left college without completing

a degree or certificate were assigned to the occupational education major field (TOP code) in which they accumulated the greatest number of units. In cases of ties, students were randomly assigned to one of the TOP codes in which the student had completed an equivalent number of units.

Use of Consumer Price Index to Adjust Earnings for Changes in Inflation

Wages were reported for former students over a five-year period. In order to make comparisons of wages comparable from year to year, the Consumer Price Index for California was used to adjust earnings for changes in inflation. For the purpose of this study, all wages were adjusted to 1992 dollars.

EDUCATIONAL VALUE OF THE POST-EDUCATION EMPLOYMENT TRACKING SYSTEM

Relationship between Educational Attainment and Subsequent Earnings

The data presented in **Table 4** show the relationship between educational attainment and subsequent employment rates and earnings for occupational education program completers and leavers who were 18 to 24 years of age at the time they left the college and who worked four quarters in a given year after leaving the college. The rationale for excluding older students from this particular analysis will be provided in the section of this report on the relationship between age and wages, where it is shown that older students earned substantially more money while attending college than did students 24 years of age or younger.

TABLE 4
WAGES BY EDUCATIONAL ATTAINMENT
FOR 18-24 YEAR OLD STUDENTS
(Reported in 1992 Dollars)

Educational Attainment Level	N	1st Year After College	3rd Year After College	% Change from 1st to 3rd Year After Leaving College
<u>Degree</u>	546	\$18,443	\$26,078	41%
% Working 4 Quarters		63%	71%	13%
<u>Certificate</u>	144	\$18,914	\$21,729	15%
% Working 4 Quarters		69%	76%	10%
<u>12 or More Units</u>	1,238	\$16,080	\$20,519	28%
% Working 4 Quarters		62%	67%	8%

The data presented in **Table 4** reveal that:

1. In the third year after leaving the college, the earnings of students who earned an associate degree were substantially higher than those of students who received a college certificate (\$26,078 vs. \$21,729) and those who completed 12 or more units of occupational education courses but did not receive a degree or certificate (\$26,078 vs. \$20,519).
2. The first- to third-year gain in post-college earnings for students who received an associate degree was much greater than the gains in income by those who achieved a college certificate (41% vs. 15%) or of those who left college without completing a degree or certificate (41% vs. 28%).
3. Students who received an associate degree were more likely than those who left college without a degree to be working year-round after leaving the college.

These findings provide strong support for the economic value of the associate degree. They are consistent with the findings reported by the U.S. Bureau of the Census, which show that students

who complete the associate degree earn more money than those high school graduates who opt not to attend college or who withdraw from college before acquiring the associate degree (U.S. Bureau of the Census, 1992).

It is important to note that the differences in the first-year post-college earnings among students in the three educational attainment groups were not great. This finding indicates the importance of tracking the post-college earnings of former students over an extended period of time rather than just six months after they leave college, as is the current practice of the California Community College's State Student Follow-up System. In the case of the data reported in **Table 4**, an assessment of the economic value of the associate degree based on first-year post-college earnings would be radically different than what it would be if first- and third-year post-college wages were considered.

Gains in College to Post-College Earnings (Value Added) by Educational Attainment Level

One approach for measuring the economic value of completing community college occupational education courses, certificates and degrees is to compare student earnings and year-round employment rates while students are attending college with their post-college performance on each of these measures. As illustrated in **Table 5**, students who completed an associate degree or certificate more than tripled their earnings from the time they were attending classes to three years after they left the college. Those who left the college without a degree or certificate saw their earnings more than double during this same time period. In addition, there were increases in the percentage of students who worked year-round from the time they were attending classes to their first to third year after leaving the college.

TABLE 5

GAINS IN COLLEGE TO POST-COLLEGE EARNINGS (VALUE ADDED) BY EDUCATIONAL ATTAINMENT LEVEL (Reported in 1992 Dollars for 18-24 Year Old Students)

Educational Attainment Level	N	Year Prior to Leaving College	3rd Year After College	% Change from Year Prior to Leaving College to 3rd Year After College
<u>Degree</u>				
	546	\$8,545	\$26,078	205%
% Working 4 Quarters		64%	71%	11%
<u>Certificate</u>				
	144	\$6,426	\$21,729	238%
% Working 4 Quarters		56%	76%	36%
<u>12 or More Units</u>				
	1,238	\$8,479	\$20,519	142%
% Working 4 Quarters		58%	67%	16%

The information used to assess the college to post-college economic gains presented in this paper was based on former students who were 18 to 24 years of age at the time they left college. The Post-Education Employment Tracking System provides users with a great deal of flexibility in selecting which groups of students they wish to include in this or any other analysis.

Educational Attainment and Subsequent Earnings of Students Who Were Economically Disadvantaged Compared to Those Not Economically Disadvantaged Upon Entering College

The Post-Education Employment Tracking System allows for analyses to be conducted on the post-college labor market participation rates and earnings of students in particular population groups. The categories of students that can be studied correspond to the extensive demographic and educational data that reside in the Chancellor's Office MIS. Having easy access to such information enables educators to focus on students in each of the five special population groups identified in the Vocational and Applied Technologies Act, as well as students in other population categories.

The following analysis is presented to illustrate how information available from PEETS can be used to gain insights into the economic contribution of a community college associate degree on the subsequent earnings and labor market participation rates of students in particular population groups.

The information presented in **Table 6** shows the relationship between post-college earnings and year-round employment rates, by educational attainment level, for students who received need-based financial aid while attending college (economically disadvantaged) vs. those who did not (non-economically disadvantaged).

TABLE 6
POST-COLLEGE WAGES BY EDUCATIONAL ATTAINMENT
FOR STUDENTS WHO RECEIVED FINANCIAL AID WHILE IN COLLEGE (ECONOMICALLY
DISADVANTAGED) VS. THOSE WHO DID NOT (NON-ECONOMICALLY DISADVANTAGED)*
(In 1992 Dollars for Students Who Worked Four Quarters)

Educational Attainment Level	N	Year Prior to Leaving College	1st Year After College	3rd Year After College
<u>Degree Completers</u>				
Economically Disadvantaged	81	\$7,055	\$21,802	\$27,645
% Worked 4 Quarters		59%	67%	73%
Non-Economically Disadvantaged	382	\$12,023	\$25,026	\$29,182
% Worked 4 Quarters		65%	76%	78%
<u>12 or More Units/No Degree</u>				
Economically Disadvantaged	137	\$8,357	\$17,989	\$22,554
% Worked 4 Quarters		42%	54%	56%
Non-Economically Disadvantaged	838	\$16,634	\$21,942	\$25,599
% Worked 4 Quarters		55%	67%	73%

***NOTE.** Figures based on all college degree completers and leavers with 12 or more units, regardless of age.

The information presented in **Table 6** reveals that by the third year after leaving college, **economically disadvantaged students** who completed an associate degree:

1. Earned almost as much money as non-economically disadvantaged students who completed the associate degree (\$29,182 vs. \$27,645).
2. Earned more money than non-economically disadvantaged students who completed 12 or more units of occupational education courses, but did not finish an associate degree (\$27,645 vs. \$25,592).
3. Earned a substantially greater amount of money than economically disadvantaged students who left college before receiving an associate degree (\$27,645 vs. \$22,554).
4. Were much more likely to be employed year-round than economically disadvantaged students who did not complete the associate degree (73% vs. 56%).

These findings are most encouraging in that they demonstrate the value of the associate degree in narrowing the disparity in income between students from economically disadvantaged and non-economically disadvantaged backgrounds. On the other hand, the data provided in **Table 6** suggest that many of the program leavers who were economically disadvantaged while attending college are likely to remain so in their post-college years.

Post-College Earnings of Associate Degree Recipients by Major Fields

How much money can one reasonably expect to earn after completing an associate degree in a particular occupational education program offered by a college? To date, high school and college staffs have had a great deal of difficulty in responding to this most basic consumer information question on the potential economic value of their programs.

The primary sources of information used by high school and college staffs to respond to questions on the potential earnings that graduates of their programs can anticipate receiving have been the reports published by the U.S. Department of Labor and the California Employment Development Department on the average and median earnings of people employed in various occupational categories at the national, state and county levels. While such information is valuable, it does not enable one to relate post-college earnings to participation in a particular occupational program, level of educational attainment, or number of years in the workforce.

The data presented in **Table 7** show the capacity of PEETS to generate data on the post-college earnings and labor market participation rates of students who were enrolled in specific occupational education programs at a particular community college. More specifically, the data in **Table 7** show the first and third years of post-college earnings for students who received an associate degree in each of 11 major fields. The percentage figure below each of the earnings numbers shows the percentage of associate degree recipients who were employed in California four consecutive quarters in a given year and the percentage of the associate degree recipients who worked four quarters and earned at least half of the average total manufacturing wages in California (\$12,875 or \$6.15 an hour in 1992 dollars).

TABLE 7

**POST-COLLEGE WAGES BY MAJOR FIELD (TOP CODE)
FOR STUDENTS WHO EARNED AN ASSOCIATE DEGREE***
(In 1992 Dollars)

Major Field	N	<u>Worked Four Quarters**</u>		<u>Worked Four Quarters and Earned \$12.875 or More***</u>	
		First Year Out	Third Year Out	First Year Out	Third Year Out
Admin of Justice	13	\$17,941 (86%)	\$26,505 (86%)	\$26,345 (36%)	\$31,306 (79%)
Business	114	\$20,674 (65%)	\$25,823 (73%)	\$28,377 (59%)	\$30,704 (57%)
Comp Sci/CIS	65	\$22,591 (72%)	\$28,271 (77%)	\$26,575 (57%)	\$30,225 (70%)
Drafting/CAD	54	\$24,796 (100%)	\$28,360 (67%)	\$27,204 (62%)	\$35,079 (53%)
Electronics	34	\$29,131 (69%)	\$31,990 (75%)	\$31,568 (63%)	\$32,895 (72%)
Graphic Arts	20	\$14,145 (60%)	\$24,969 (67%)	\$20,246 (35%)	\$27,732 (56%)
Marine Technology	14	\$22,618 (55%)	\$24,595 (70%)	\$26,863 (45%)	\$27,289 (60%)
Nursing	110	\$30,564 (87%)	\$33,760 (86%)	\$32,027 (81%)	\$35,907 (79%)
OIS	17	\$20,700 (88%)	\$24,311 (82%)	\$22,127 (76%)	\$24,311 (82%)
Radiology	14	\$28,313 (84%)	\$31,065 (78%)	\$29,368 (78%)	\$31,839 (76%)
Rest Mgt Two-Year Certificate	44	\$18,356 (68%)	\$22,479 (71%)	\$21,454 (48%)	\$23,620 (66%)

*NOTE. The data are based on students who received an associate degree from 1985 through 1989. Earnings were combined and adjusted to 1992 dollars.

**NOTE. The percentages reported under the wage data reflect the percentage of the former students who worked four quarters in that year.

***NOTE. The percentage reported under the wage data reflects the percentage of the former students who worked the four quarters and earned \$12,875 or more that year (50% or more of the average hourly earnings of production workers on manufacturing payrolls in California).

Among the findings reported in **Table 7** for students who received an associate degree from Santa Barbara City College from 1985 to 1989 were that:

1. The percentage of graduates who found year-round employment in California during their first year after leaving the college ranged from a high of 100% for those in the Drafting/CAD Program to 55% in the Marine Diving Technology Program.*
2. The percentage of associate degree recipients who worked all four quarters and earned at least \$6.15 an hour in their first year out of college ranged from 81% in Nursing to 35% in Graphic Communications.
3. The first-year salaries for the associate degree recipients who worked all four quarters ranged from a high of \$30,564 for graduates in the Nursing Program to \$14,145 for graduates of the Graphic Communications Program.
4. The third year of post-college earnings of the associate degree recipients who worked four quarters was highest among graduates in Nursing (\$33,370), Electronic/Computer Technology (\$31,970) and Radiography (X-Ray) (\$31,065).
5. The average earnings of the college's associate degree recipients who made at least \$6.15 an hour in their third year after leaving college exceeded \$30,000 a year for graduates in seven of the 11 programs examined.

The purpose of reporting the results of these analyses is not to focus on Santa Barbara City College data per se, but rather to demonstrate the value of the information provided by the Post-Education Employment Tracking System for assessing and understanding program effectiveness. To illustrate, the information presented in **Table 7** revealed that with the exception of Graphic Communications, the first-year post-college earnings for associate degree recipients were respectable. When asked to respond to the wage and employment data, faculty and staff in the Graphic Communications Department and members of the program's advisory committee agreed that while the entry-level salaries are not very high for many print and graphic design jobs in the greater Santa Barbara area, there are excellent opportunities for those who demonstrate the skills and motivation to earn higher salaries. The gains in the first to third years of post-college earnings among Graphic Communications Program graduates are consistent with this observation.

Nevertheless, the finding that such a high percentage of Graphic Communications Program graduates were not earning at least \$6.15 an hour in their first or third year after graduating from the college indicates a need to re-examine the positions which the program is preparing its graduates to enter. The findings of this study have stimulated the Graphic Communications Department faculty and staff to place a greater emphasis on its recently introduced Graphic

*Note: A high percentage of the graduates of the Marine Diving Technology Program are hired by U.S. companies to perform assignments in other states and in other countries. This information needs to be shared with prospective students.

Business Management Program. In addition, the department faculty and staff agreed to revise their Graphic Communications curriculum to place a greater degree of focus on "high-end" skills that will command higher wages in the labor market. The longitudinal data produced by PEETS will enable the college to assess the extent to which the changes in curriculum and program emphasis are reflected in the earnings and labor market participation rates of students who complete the associate degree in Graphic Communications in the next three years.

COMPARISON OF POST-COLLEGE WAGES BETWEEN COLLEGES

Grossmont College and Santa Barbara City College each examined the post-college wages of students who completed 12 or more units in a major field. In five instances, the 11 major fields studied by the research team at Grossmont College were either not offered at Santa Barbara City College or were analyzed in a way that did not allow for direct comparisons. There were, however, five major fields that were studied in the same way at each institution. The data presented in **Table 8** show the post-college wages of students from each of the two project colleges. The data are for all program leavers with 12 or more units in their major regardless of their educational attainment level or age at the time they left college. The findings in **Table 8** reveal that the post-college wages for program leavers in each of the five major field areas examined were very similar across the two institutions. This finding lends support to the credibility of the wage data collected by the EDD.

TABLE 8
COMPARISON OF POST-COLLEGE WAGES IN
FIVE MAJOR FIELDS FOR PROGRAM LEAVERS
AT GROSSMONT COLLEGE AND SANTA BARBARA CITY COLLEGE
(In 1992 Dollars for Students Who Worked Four Quarters)

<u>Major Field</u>	<u>N</u>	<u>Grossmont College</u>	<u>N</u>	<u>Santa Barbara City College</u>
<u>Administration of Justice</u>	40		40	
1st Year After College		\$21,600		\$20,846
3rd Year After College		\$29,000		\$28,955
<u>Business Office Technology</u>	118		146	
1st Year After College		\$15,400		\$19,551
3rd Year After College		\$19,900		\$22,667
<u>Comp Sci/CIS</u>				
1st Year After College	58	\$25,000	65	\$22,591
3rd Year After College		\$26,900		\$28,271
<u>Early Childhood Education</u>	33		33	
1st Year After College		\$14,000		\$15,365
3rd Year After College		\$17,600		\$17,360
<u>Nursing</u>	129		111	
1st Year After College		\$27,800		\$28,830
3rd Year After College		\$33,500		\$32,801

Relationship Between Age and Earnings

The information presented in Table 9 shows the earnings and employment rates for students in each of the following three age categories: (1) 18-24; (2) 25-34; and (3) 35 and older during the year before they left Santa Barbara City College and in the first and third years after they left the college. More specifically, for each age group, information is presented on: (1) wages earned in a particular year for those individuals who worked at least one quarter during that year; (2) percentage employed; (3) percentage who worked year-round (worked four quarters); and (4) for those individuals who worked, the percentage who did so year-round.

TABLE 9
WAGES AND EMPLOYMENT RATES BY AGE*

<u>Employment Status/ Time Out of College</u>	<u>Age at Time of Leaving College</u>		
	18-24 (N = 900)	25-34 (N = 677)	35+ (N = 343)
<u>Year Before Leaving SBCC</u>			
Wages	\$5,233	\$10,682	\$13,351
% Employed	83%	78%	61%
% Worked Year-Round	47%	49%	38%
% Employed Who Worked Year-Round	57%	62%	61%
<u>1st Year After Leaving SBCC</u>			
Wages	\$10,242	\$17,991	\$18,029
% Employed	80%	73%	69%
% Worked Year-Round	50%	55%	50%
% Employed Who Worked Year-Round	62%	73%	73%
<u>3rd Year After Leaving SBCC</u>			
Wages	\$15,839	\$22,971	\$23,408
% Employed	76%	71%	63%
% Worked Year-Round	52%	54%	51%
% Employed Who Worked Year-Round	69%	77%	81%

*NOTE. Wages based on participants who worked one or more quarters in a given year. The wages are understated in that many of the former students were not employed on a full-time basis.

The information reported in Table 9 shows that there was a strong, positive relationship between age and earnings during and after the time students attended college. For instance, among those students who worked one or more quarters in the year before leaving college, those

35 years of age or older earned substantially more money than students in the 25-34 age range (\$13,351 vs. \$10,862) and those in the 18-24 age category (\$13,351 vs. \$5,233). Such findings are in line with what one would expect, given that older students are more likely than younger students to have been employed a longer period of time and, as such, have had a greater opportunity to increase their earnings.

Implications of These Findings for Assessing the Relationship Between Educational Attainment and Post-College Employment and Earnings

Large differences in earnings between younger and older students during and after attending college highlights the importance of controlling for age and/or prior wages when analyzing post-college earnings. Failure to do so may result in the overstatement of entry-level earnings, particularly for students who were employed while attending college.

For example, it is important to differentiate the \$36,000 a year computer programmer, who has taken several Computer Information Systems (CIS) courses to keep current in his or her field from the student who has completed an associate in science degree in CIS to prepare for an entry-level position related to his or her training. Not differentiating the post-college earnings of these two types of students can result in: (1) overstating the entry-level wages associated with the CIS Program; and (2) drawing the conclusion that students who take several occupational education classes, but do not earn a degree, make more money than those who complete the associate degree. Fortunately, the Post-Education Employment Tracking System allows for wage and employment data to be analyzed by such factors as age, earnings while attending college, educational goals, and educational attainment, either individually or in combination with other factors (multivariate analyses).

While it is true that the average income for older students was much greater than that of younger students while attending college, it is also true that a high percentage of the students 25 years of age and older were either not employed at the time they were taking classes or, if they were employed, they were not working on a year-round basis. This finding most likely reflects the large numbers of older students who participate in community college occupational education courses to obtain skills needed to enter the labor force or to acquire skills to upgrade their employment situation.

As illustrated in **Table 9**, students in each of the three age categories registered substantial increases in earnings and year-round employment from the time they were attending college to three years after leaving college. The gains in year-round employment were most pronounced among those 35 years of age or older at the time they departed the college.

Although the gains in post-college earnings and year-round employment rates are impressive, the finding that a significant percentage of the former students in each of the age categories were either not employed or were not employed on a year-round basis several years after leaving the college raises questions as to why this is so. For instance, what percentage of these former occupational education students voluntarily opted to not work at all, or not work on a full-time basis? What problems were former students

experiencing in gaining employment? A procedure for gaining responses to these types of questions will be advanced in the concluding section of this paper.

The Estimated Cost of Matching UI Wage Record Data with Chancellor's Office MIS Student Records

The estimates provided by the California Employment Development Department for matching the wage record data with the Chancellor's Office MIS student records over a four-year period are provided in **Table 10**. The estimates are based on matching the UI wage records for four years of all California community college program completers and leavers who completed six or more units over a four-year period.

TABLE 10
ESTIMATED EDD COSTS OF MATCHING WAGE RECORD DATA
TO STUDENT FILES OF COLLEGE LEAVERS
OVER A FOUR-YEAR TIME PERIOD

	Last Year In College	1st Year Out of College	2nd Year Out of College	3rd Year Out of College	Cost for Four Years
EDD Cost for All Colleges	\$13,100	\$10,200	\$10,700	\$11,000	\$45,000
Number of Records Matched	1,200,000	1,800,000	2,400,000	2,400,000	

As shown in **Table 10**, it is estimated that it will cost about \$45,000 a year to match the wage record data to the student files over a four-year period. Tracking the wage and employment data over a four-year period will involve matching approximately 2.4 million records. This total is based on the estimate that approximately 600,000 students leave community colleges each year after completing six or more units and there are four cohorts or groups of college leavers being tracked at a given time (600,000 students in each cohort of college leavers X four groups of college leavers = 2.4 million student records).

The EDD cost estimate doesn't include Chancellor's Office staff time to analyze the data and generate reports for individual colleges and state agencies. Nevertheless, acquiring accurate post-college longitudinal data on about 2.4 million students for less than \$50,000 a year is quite inexpensive. It is also far less costly than processing limited responses to a survey mailed to students six months after they leave college.

Potential Applications of the Post-Education Employment Tracking System

The data made available from the Post-Education Employment Tracking System can be used to address a wide range of needs. These needs include responding to federal and state accountability requirements, providing information on post-college earnings and employment rates in advising and program review processes, and conducting special studies on the post-college earnings and

labor market participation rates for different groups of students. A list of potential applications of the data generated by the Automated Student Tracking System is provided in **Table 11**.

TABLE 11

**POTENTIAL APPLICATIONS OF THE POST-
EDUCATION EMPLOYMENT TRACKING SYSTEM**

Meeting Federal and State Accountability Requirements

Data on post-college outcome measures, such as employment rates and earnings by major field for specific categories of students, can be used in meeting the following federal and state accountability requirements:

- Federal Disclosure Law (Student Right-to-Know)
- VATEA Core Standards and Measures
- Accreditation Commission Standards Pertaining to Student Outcomes
- Evaluations of the Effectiveness of Federal- or State-Funded Programs

Applications by Colleges

Information generated by the Post-Education Employment Tracking System can be used at the college level to assist in such activities as:

- Recruitment of Students
- Career Counseling and Advising
- Program Review
- Educational Planning and Resources Allocation
- Research on the Relationship between Student Participation in Particular Programs (e.g., Work Experience, Tech-Prep) and Post-College Employment and Earnings

Future Directions

Discussions have been taking place to link the UI wage record data with secondary schools, ROP, UC and CSU student databases, as well as the Chancellor's Office MIS. This will provide a rich source of information on the relationship between student levels of educational attainment and post-college employment rates and earnings.

ADVANTAGES/LIMITATIONS OF POST-EDUCATION EMPLOYMENT SYSTEM

Existing Procedures for Assessing Post-College Labor Market Outcomes

Before discussing the advantages and limitations of PEETS, it would be useful to describe the existing procedures for gathering data on the post-college labor market outcomes for occupational education program leavers and completers. To date, the method used by California community colleges to measure job placement rates and earnings of their former students has been to send a questionnaire to occupational program completers and leavers approximately six months after they last attended the institution. The questionnaire sent to former students is part of the Chancellor's Office-supported State Student Follow-up System Project (SSFS).

A number of factors have seriously undermined the accuracy and usefulness of the data collected from the SSFS-mailed follow-up questionnaire. Foremost among these shortcomings has been an extraordinarily low response rate, with most colleges recording less than a 20% return rate for program completers and leavers to whom they were sent. The small number of responses received severely limits one's ability to assess the effectiveness of an instructional program or the effectiveness of the program for specific groups of students.

Additional problems associated with using a mailed survey to gather labor market information from former occupational education students include: a high likelihood of response bias; reliance on self-reported data on job placement and earnings; inability to track former students in the labor market for an extended period of time; high cost of conducting follow-up mail surveys; and the burden of data collection placed on staff at each of the 107 colleges in the state. Similar problems have also been encountered in other states (e.g., Arizona, Colorado, Florida, Minnesota, Oregon, Texas, Washington) that have attempted to use a mailed questionnaire to collect information from occupational education program completers and leavers (Stern, 1988).

Unlike the follow-up mail surveys, PEETS does not suffer from low response rates (over 90% of the civilian employees are covered); is not subject to faulty recall by respondents; and entails no new data collection burden for local college districts. The advantages and limitations of PEETS compared to using a follow-up mail survey to assess post-college labor market outcomes are discussed below.

Advantages of the Post-Education Employment Tracking System

1. **High Match/Response Rate.** The state UI wage records contain earnings data on about 95% of all employees in California. The results of the field tests showed that UI wage record data were available for over 80% of the college program completers and leavers the first year after they last attended college, and 75% of the leavers and completers three years after they left college. Furthermore, wage record data were available for one or more quarters in the four-year period examined for over 90% of the students studied.

These high match rates contrast with the low response rates of 20% or less obtained by most colleges that used mail surveys to collect data from their program leavers and completers.

2. **Accuracy of Data.** The earnings and employment data collected by EDD are based on employers' actual payroll records, as compared to self-report information provided by survey responses.
3. **Ease of Linking Wage Record Data with Student Files Contained in the Chancellor's Office MIS.** The Social Security number is the only required identifying element for matching the UI wage records with student files. The ease of electronically matching MIS student files with the UI wage records makes it possible for the linking of data to take place at the state level for all colleges, rather than having each institution responsible for collecting its own follow-up data.
4. **Allows for a Variety of Data Analyses to Be Conducted.** Linking the UI wage record information to the demographic educational background and college performance data elements in the Chancellor's Office database allows for a wide range of analyses to be conducted at the state and individual college levels. For instance, if a college or the system is interested in assessing the relationship between student participation in its Cooperative Work Experience program and post-college employment and earnings, it can do so. This is because the data on the number of units completed in Cooperative Work Experience courses reside in the Chancellor's Office MIS and the UI wage record data are added to each student record. The low response rate to mail surveys severely limits the capacity to conduct analyses of students in particular demographic, educational background, or college experience categories.
5. **Availability of Data for Longitudinal Studies.** The UI wage record data are available by quarter for an extended period of time, thus allowing for short-term and long-term longitudinal analyses. The results of this feasibility study found that tracking student wages and employment over a four-year period made the most sense from both a cost and evaluative perspective. However, if desired, the capability is available to track employment rates and wages for more than a four-year period.

Having the capability of tracking student employment and wages over an extended period represents a substantial improvement over the State Student Follow-up System, which relies on a mailed survey to collect post-college employment data from former students at one point in time, usually within six months of departing college. The availability of longitudinal data allows for detailed analyses of long-term employment and earning patterns by program.

6. **Timelines of Data.** The wage record data for any quarter are generally available within four months after it is collected from employers. The availability of the UI wage record data will enable colleges to have current information on the employment rates and wages of their former students.

7. **Cost Effectiveness of Matching UI Wage Records with the Chancellor's Office MIS Student Files.** Gaining access to the UI wage record data and linking it to the student files in the Chancellor's Office MIS provides a cost-effective alternative to the time-consuming, costly and ineffective method of having each of California's 70 community college districts gather information from a mail survey, such as that used by the State Student Follow-up System.

Along with providing much more accurate and useful data than the State Student Follow-up System, the Post-Education Employment Tracking System is substantially less costly and time-consuming to operate.

8. **Information Can Be Merged with Other Data Sources.** The capability of monitoring the post-college employment and wages of community college students can be extended by electronically linking PEETS with such databases as: UC, CSU and private California college and university student files; military records; and the U.S. Office of Personnel Management file data for federal government civilian employees. Matching PEETS data with one or more of these data sources will provide a more complete map of the post-community college employment and wage experiences of program completers and leavers. The feasibility of linking these databases with PEETS is currently being investigated.

DISADVANTAGES OF THE POST-EDUCATION EMPLOYMENT TRACKING SYSTEM

1. **Not All Students Will Be Included in the UI Wage Records Files.** The California EDD doesn't collect UI wage record information on people who leave the state, work in the military, work for the federal government, are self-employed, or receive all of their earnings on a commission basis. Excluding these categories of workers from PEETS results in underestimating the post-college employment rate of community college students. However, the fact that approximately 95% of the people employed in California are covered by the UI system and that UI data were available for over 90% of the students in the study demonstrates that this is less a disadvantage than expected.
2. **Inability to Determine Whether Students' Post-College Jobs Are in Fields Related to Their Occupational Education Training.** The state Unemployment Insurance wage record for each employee includes the industry affiliation (Standard Industrial Code) of his or her employer. Thus, individuals employed at a hospital would receive the same Standard Industrial Code (hospital or health services), regardless of what their job was at the hospital. Furthermore, as noted by Jarosik and Phelps (1992), since individual occupational programs are structured around occupations (e.g., accounting, nursing), rather than industries (e.g., department stores, health services), it is technically impossible to determine the precise training-related match unless occupational titles used by employers are collected from them as part of the routine UI wage record reporting process (p. 85).

Recognizing the value of collecting from employers the occupational title of each of their employees, the California Occupational Information Coordinating Committee has awarded Applied Management and Planning Group a contract to conduct a feasibility study to identify methods of acquiring occupational-specific post-training employment data by modifying the UI reporting system. Recommendations emanating from this feasibility study should be available in November 1993.

3. **UI Wage Records Cannot Be Used to Determine Hourly Wage Rates on the Number of Hours Employed.** The UI wage data collected each quarter contain the earnings received by an employee during a three-month period. Since the number of hours an employee worked is not reported, it is not possible to determine whether or not the person was employed full-time or how much the employee earned per hour.

The following two steps were taken in this feasibility study to address these limitations. The first was to identify those individuals who worked four consecutive quarters in a given year. This provided a measure of year-round employment. A second approach used in this study to distinguish between part-time and full-time employment was to establish a minimum annual wage as the threshold for considering a person to be employed full-time. The minimum annual income threshold used in this study was \$12,875, which translates into \$6.15 an hour in 1992 dollars. The \$12,875 annual wage was derived by multiplying \$6.15 an hour by 2,080 hours a year (the number of hours a person employed full-time works during a year).

The \$6.15 an hour figure represents half of the average hourly earnings of production workers on manufacturing payrolls in urban areas of California (California Labor Market Bulletin Statistical Supplement, May, 1993). This figure was selected instead of the minimum wage of \$4.25 an hour because a person working full-time at that rate of pay would fall below the poverty level if he or she were the sole income earner for a family.

The measures of year-round employment and annual wage of \$12,875 (or more) used in this study are approximations of full-time employment. The UI wage data cannot be used to determine whether employees are working full- or part-time.

4. **UI Wage Data Doesn't Address Quality of Job Preparation.** A serious shortcoming of the UI wage record data is the absence of information on the assessment of the quality of training former students received to acquire and perform their job responsibilities. Feedback on the quality of job preparation can best be provided by former students and their employers.

A logical recommendation for gathering this evaluative information would be to send a follow-up mail survey to students and their employers. However, the historically low response rates of such follow-up surveys experienced in California and other states has severely limited the confidence in the validity of the data collected. Clearly, an alternative approach is needed to assess the quality of preparation students received in their programs of study.

One promising method of assessing the quality of preparation is the proposed National Skills Standards that are included in the Goals 2000: Educate America Act. Assessing student mastery of skills standards in specific occupational areas will provide much more valid information on the quality of job preparedness than will former students' self-reported responses to items on a follow-up survey.

IMPLEMENTATION OF POST-EDUCATION EMPLOYMENT TRACKING SYSTEM

The Chancellor's Office of the California Community Colleges is in the process of entering into an agreement with the California Employment Development Department to electronically match the UI wage record data with the student records maintained in the Chancellor's Office Management Information System. The plans call for tracking the employment and wage experiences of all college program completers and leavers over a four-year period, from their last year of attendance at the community college to three years after they leave the college. Matching of the UI wage record data with the student files in the Chancellor's Office MIS will begin in Spring 1994. UI wage records for all four quarters in a given year will be added to the student files once each year.

The tracking study will begin with the cohort of students who last attended their community college in 1990-91. The 1990-91 academic year was selected as this study's starting point because it is the first year in which data in the Chancellor's Office new MIS are available. Thus, in June 1994, three years of longitudinal data will be available for the first cohort of college completers and leavers to be tracked. By June 1995, four years of UI wage record data will be available for the 1990-91 cohort. Three years of data will be reported for the 1991-92 cohort; two years of UI employment and wage data will be available for the cohort of students who last attended the college in 1992-93; and one year of UI wage record data will be reported for the cohort of students who last attended college in 1993-1994.

Procedures need to be developed on how the information will be analyzed and reported to the colleges and state policy-makers. At this point, the intent is to have the Chancellor's Office staff produce standardized reports for the system and to provide each college with a disk containing its own data from which additional analyses can be conducted. Procedures on how the information will be analyzed and reported to the colleges and state policy-makers need to be developed, as do the methods for providing assistance to local districts interested in conducting additional analyses of their data beyond that which will be provided by the Chancellor's Office staff. An important concern that needs to be addressed in providing data to colleges is the protection of student confidentiality so that no individual can be identified for the data provided.

RECOMMENDATIONS FOR IMPLEMENTATION OF PEETS

The following recommendations for implementing the Post-Education Employment Tracking System are based on the knowledge acquired during this pilot study and on the experiences of 13 other states (as reported by Jarosik and Phelps, 1992) that have experimented with the use of UI wage records. A number of these recommendations are already being considered by the Chancellor's Office staff.

Recommendation 1. The Chancellor's Office staff should be responsible for analyzing the PEETS data and summarizing it in standardized reports that will be made available to individual colleges on a timely basis. The reports should contain information needed by the colleges to assist them in meeting local accountability, planning and program improvement requirements. Each college should receive its own data, aggregate data for all California community colleges, and aggregate data for an appropriate comparison group of other colleges (e.g., large-sized colleges, urban colleges). A state-wide task force should be formed to work with the Chancellor's Office to identify the standard analyses to be conducted and the format in which the data are to be presented to local colleges and state agencies. In order not to violate confidentiality regulations, attention needs to be paid to insuring that the data provided to colleges cannot be used to identify an individual student. Examples of standard reports that could be provided to the colleges are provided in **Tables 12-13**

TABLE 12

**POST COLLEGE EMPLOYMENT RATES AND
EARNINGS BY EDUCATIONAL ATTAINMENT
(By Program Area for All Program Leavers)**

PROGRAM: _____
(Name of Program/Major)

Educational Attainment	Number of Students	Percent Employed	Percent Employed 4 Quarters	Mean Earnings: Employed 4 Quarters	Percent Earning More than 50% of Average State Manufacturing Wage
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**Last Year in
College**

AA/AS Degree
Certificate
12 or More units

**1st Year After
College**

AA/AS Degree
Certificate
12 or More Units

**3rd Year After
College**

AA/AS Degree
Certificate

12 or More Units

*NOTE. This format could be used in providing data for: (1) each major or TOP Code; (2) average for all community colleges in each major field; (3) average for community colleges in appropriate comparison group. This table could also be used to report data for students in the 18-24 year age group.

TABLE 13

POST-COLLEGE EMPLOYMENT RATES AND EARNINGS FOR STUDENTS IN VARIOUS DEMOGRAPHIC CATEGORIES (By Program Area for All Program Leavers)

PROGRAM: _____
(Name of Program/Major)

Educational Attainment	Number of Students	Percent Employed	Percent Employed 4 Quarters	Mean Earnings: Employed 4 Quarters	Percent Earning More than 50% of Average State Manufacturing Wage
<u>Last Year in College</u>					
Educ. Disadvantaged					
Disability					
Econ. Disadvantaged					
Lmtd. Engl. Prof.					
Single Parent					
Underrepresented					
Female					
Male					
18-24 Years of Age					
25-35 Years of Age					
35 Years and Over					
<u>1st Year After College</u>					
Educ. Disadvantaged					
Disability					
Econ. Disadvantaged					
Lmtd. Engl. Prof.					
Single Parent					
Underrepresented					
Female					
Male					
18-24 Years of Age					
25-35 Years of Age					
35 Years and Over					

3rd Year After
College

Repeat Categories

Recommendation 2. Along with the standard reports provided by the Chancellor's Office, colleges should be provided with files containing their own PEETS data that can be used for additional analyses. The Chancellor's Office staff should oversee the training of college staff in working with the PEETS data.

Recommendation 3. Efforts are needed to expand the UI wage record data elements collected from employers to include the total number of compensated hours and job titles for all employees. If it is not possible to achieve this objective, then other methods of collecting this information should be explored. The availability of this data would enable PEETS to generate more accurate information on whether or not individuals were employed full-time and/or the extent to which their jobs are related to the occupational education programs in which they participated. As previously noted, a study is being conducted to determine the feasibility of requiring employers to report this additional information in exchange for having to respond to fewer federal- and state-mandated requests for employment-related information.

If job titles cannot be added to the UI wage records, then one of the following alternative steps that are being used in other states needs to be taken to address the question of the relatedness of training to employment. The approach taken in the state of Washington has been to link 18 Classification of Industry Programs (CPI) codes with various Standard Industrial Codes (SIC) that are part of the UI wage record data. The protocol of linking SIC codes with CPI codes has enabled Washington state to provide colleges with an indication of the percentage of former students working in training-related jobs.

Florida and Indiana are collecting occupational titles from employers on a regular basis through supplemental surveys. This information is then used to develop norms for each occupational education program on the participation rates in each SIC area. A third approach to solving this problem is to follow Alaska's lead in mandating, by state legislation, the collection of occupational titles as part of the UI wage record system. Descriptions of these three approaches used to estimate the relatedness of training to employment are described in the article by Jarosik and Phelps (1992).

Recommendation 4. The UI wage record data and the Chancellor's Office student MIS files should be matched with student files from California's public and private four-year colleges and universities. This will enable PEETS users to: (1) separate the employment data for former students who continue their education after leaving their community college from that of former students who are no longer attending college in California; and (2) assess the economic value of completing upper division coursework and degrees in particular fields of study.

The need to know whether students continued their education after leaving the community college is evident in the finding that about 25% of the occupational education completers in Florida's community colleges continued their education, and that 15% of these program completers were working and attending classes after leaving the community college (Jarosik and Phelps, 1992). Not knowing whether or not former community college students are enrolled in a post secondary institution will result in understating the employment rates and earnings of program leavers.

The Chancellor's Office staff has initiated discussions with UC and CSU to match their respective student data files. Once this occurs, these student files could be matched to the UI wage record data.

Recommendation 5. Consideration should be given to matching the UI wage record database with other databases on employees not covered by the UI wage record system. Employees exempted from the UI system include federal civilian employees and military personnel. Since only about three percent of the employees in California are not covered by the UI system, the benefits versus the costs of gathering this additional information should be carefully considered.

Recommendation 6. The UI wage record data need to be supplemented by periodic surveys of former students to gain insights into questions that are not addressed by PEETS, as well as those which are raised as a result of the information collected. For example, the UI wage record data do not include qualitative information on the extent to which the former students felt the education and services they received at the community college prepared them for employment. Nor does it provide answers to such questions as whether former students who were working part-time or who were not employed were doing so on a voluntary basis.

To minimize the problems associated with follow-up mail surveys, such as low response rates, response bias and required staff time, a contract should be awarded to a professional survey research firm to conduct this type of follow-up survey. The contract should require that appropriate population sampling techniques be used. In addition, careful consideration should be given to conducting follow-up surveys in selected industries in which important policy questions need to be addressed.

Recommendation 7. Consideration should be given to expanding PEETS to include students who participate in occupational training programs in California's secondary and postsecondary schools. These should include ROPS, JTPA, GAIN/JOBS, public and private four-year colleges and universities, private postsecondary vocational schools and, possibly, correctional institutions. This information would provide comprehensive data on the extent to which participation in these different types of instructional programs is associated with gains in employment and earnings for participants in different population groups.

The data would be of great value in influencing public policy decisions, in assisting training entities in assessing and strengthening their programs, and in providing consumers with much-needed information on the economic return on their investment in selecting one type of education provider versus another. Support for the feasibility of this recommendation is based on the progress that Florida has made in linking higher education, military service, adult education, correctional and federal employment databases with its UI wage record data (Jarosik and Phelps, 1992).

Recommendation 8. Where appropriate, multivariate statistical analyses should be conducted to identify the significance of various factors, by themselves and in combination with one another, to explain gains in post-college employment and earnings outcomes. More specifically, the results of multivariate statistical analyses will provide PEETS users with data on the importance of specific demographic, educational background, and college experience factors in predicting post-college employment and earnings for various groups of students.

CONCLUSION

The results of this pilot study demonstrated that the use of UI wage records is a technically feasible and cost-effective approach for assessing post-college employment rates and earnings of graduates and leavers of occupational education programs. Linking UI wage records to student files in the Chancellor's Office MIS provides community college educators with a rich informational resource from which to gain insights into the effectiveness of their occupational education programs. Serious consideration should be given to implementing the recommendations advanced in this paper for enhancing the effectiveness of the Post-Education Employment Tracking System.

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